New *Oncocnemis* (Lepidoptera: Noctuidae) from the Pacific Northwest*

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ABSTRACT

Nine Pacific Northwest *Oncocnemis, O. coprocolor, O. chalybdis, O. greyi, O. saxatilis, O. mus, O. parvacana, O. satanella, O. tartarea,* and *O. goedeni,* are described as new, and two subspecies, *O. riparia major* Grote and *O. chorda extremis* Smith, are reinstated to species rank. The adults and male genitalia are illustrated.

INTRODUCTION

A survey by Ken Goeden of the Oregon Department of Agriculture in the 1960's and early 1970's remains the most comprehensive inventory of the noctuid fauna of Oregon. Ongoing surveys in Oregon by Dr. Paul Hammond of Oregon State University (OSU) and in the Pacific Northwest (British Columbia, Washington, and Oregon) by the authors is adding considerably to our knowledge of the region's fauna. Our efforts to catalogue the noctuids of the Pacific Northwest have resulted in the discovery of many taxonomic problems, including the existence of more than thirty undescribed species. Nine of these are members of the genus *Oncocnemis* Lederer.

The characteristic features of *Oncocnemis* have been recently described by Ronkay and Ronkay (1995) in their treatment of the western Eurasian species. Briefly, members of this genus are characterized by the presence of a single large spur on the medial fore-tibiae; male genitalia with a thin, distally-tapered uncus; valvae long, with well-developed corona and cucullus; clasper perpendicular to valve, originating from ventral margin near distal sacculus, curved or S-shaped with a thin, sharply-pointed apex; vesica of aedoeagus curved or twisted, with basal diverticulae and innumerable cornuti arranged in various fields, often with a terminal spine and bristles. There are more than 100 species currently included in the genus (Poole 1989), although some of these may represent undescribed genera (Poole 1994). The genus *Oncocnemis* is holarctic in distribution, with the majority of species in western North America. Species groups are well defined and easily recognized by wing markings and genital characters; however, it is often difficult to separate closely related species within species groups (Ronkay and Ronkay 1995). Many of the species are rare or local, and the genus as a whole is typically poorly represented in collections.

In the present work we make no attempt to revise the generic concept of *Oncocnemis* or deal with the entire nearctic fauna. However, we recognize obvious species groups within which more than two species occur in the Pacific Northwest and provide keys to the identification of the closely related, Pacific Northwest members of the *O. tenuifascia* Smith and *O. figurata* (Harvey) groups. We describe nine new Pacific Northwest species

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and elevate two subspecies, *O. chorda extremis* Smith, and *O. riparia major* Grote to species rank. In the Pacific Northwest, additional problems are likely present in the *O. melantho* Smith, *O. simplex* Smith, and *O. riparia* Morrison groups. These problems are not dealt with here because many of the species and subspecies in these groups are widely distributed and because there is only limited Pacific Northwest material available for study. We do not illustrate or diagnose female genitalia in the present work. Characters of the female genitalia are useful in determining species groups and genera but are of little help in distinguishing species in closely related species complexes. Terminology for internal and external characters follows Lafontaine (1987).

New Pacific Northwest *Oncocnemis*.

1. *Oncocnemis coprocolor* **sp. n.**
(Figures 1d, 2e, 3e)

Type locality. Canada, British Columbia, BC Hydro Dam, E. end of Seton Lake.
Type material. Holotype male: Canada, British Columbia, Hwy 99 at BC Hydro Dam, E. end of Seton Lake, 250 m, 3 VI 1995, J. Troubridge, in the Canadian National Collection (CNC). Paratypes: 13 ♂♂: **Washington**: 2 ♂♂, Kittitas County, Quartz Mtn, 6,400' [1,950 m], 15 VII 1996, J. Troubridge; 1 ♂, Okanogan County, 340 m, Columbia R. Valley, W. boundary Bridgeport State Park, 29 V 1995, L. and A. Crabo; 4 ♂♂, Chelan Co., Junior Point Camp Ground, 2,100 m, 6 VIII 1997, J. Troubridge; 2♂♂, same locality and collector, 18 VII 1998; **British Columbia**: 2 ♂♂, Kirby Flats Rd., 50° 32' N 121° 43' W, 12 VI 1998, J. Troubridge; 1 ♂, same locality and collector, 17 VI 1998; **Colorado**: 1 ♂, Mesa County, Colorado Nat. Mon., Upper Red Cyn., 31 V 1997, Rodgers family.
Description. Forewing length 13-14 mm. Antennae filiform, scape brown; head with a mixture of cream and black-tipped brown scales, appearing brown; palpi light brown, with a small ventral patch of black scales on the distal second segment; prothoracic collar with four bands: beige basally followed by a thin black line, a wider fawn band, and finally a darker brown band toward the thorax; thorax with a mixture of beige, cream, black and cream-tipped beige and black scales, the tegulae, anterior thorax, and a dorsal tuft adjacent to abdomen darkest, nearly black; abdomen light gray-brown. Dorsal forewing brown, lightest in median area and inside orbicular and reniform spots, black between basal line and antemedial line below cell, dark brown-black with scattered light brown scales between postmedial line and margin, terminal area beyond scalloped brown terminal line black, producing a series of black dots between the veins, fringe checkered with brown and black; basal, antemedial, and postmedial lines incomplete, scalloped, double, black with light brown filling, antemedial line evident below cubitus where it is laterally convex and as dots at costa, postmedial line obscure above cell, oblique, thickened at veins producing a series of black dots, median shade evident only as a dark dot on costa, subterminal line incomplete, scalloped, light brown; reniform and orbicular spots faint, brown, evident mostly due to light brown filling, orbicular elliptical, reniform broad. Dorsal hindwing cream with darker base, discal dot, and veins, with a wide brown-black terminal band; fringe brown basally, white terminally.
Male genitalia. Valve (Figure 3e) relatively broad, 3.2x as long as wide, widest from clasper to cucullus, dorsal cucullus rounded; clasper 3/5x as long as valve width ending well below costa, S-shaped and talon-like with widened mid-section. Vesica (Figure 2e) bends sharply dorsad and to the right; a small basal diverticulum occurs on the left; a ribbon of sparse, spine-like cornuti extends from dorsal surface at diverticulum to apex where it curves to the left onto ventral surface; a dense patch of prostrate spine-like cornuti is present on the dorsal 2/3 of vesica; one large apical cornutus is present.

Female genitalia. Unknown.
Derivation of the name. The name is derived from the Greek word *kopros*, meaning dung. This brownish species is one of the least handsome members of the genus.
Diagnosis. There are no other species in the Pacific Northwest that could be confused with *O. coprocolor*. The most closely related species, *O. terminalis* Smith (Figure 1e) (HT Michigan State University [photograph examined]), occurs in the south-central USA and can be separated from *O. coprocolor* by the presence of distinct orbicular and reniform spots which are nearly obsolete in *O. coprocolor*.
Distribution and habitat. *Oncocnemis coprocolor* has been found in arid areas in the Fraser River Canyon near Lillooet, BC, at one location in the northern Columbia Basin near Bridgeport, Washington, on two mid-elevation ridges in the central Washington Cascades, and in Mesa Co., Colorado. It flies in late spring at lower elevations and in mid summer in the mountains.

2. *Oncocnemis chalybdis* **sp. n.**
(Figures 1r, 2h, 3k)

Type locality. USA, Washington, Table Rock, Columbia Co., 46° 01' N 117° 54' W.
Type material. Holotype male: Washington, Table Rock, Columbia Co., 46° 01' N 117° 54' W, 1,900 m, 14 VIII 1998, J. Troubridge, in the CNC. Paratypes: 7 ♂♂, 4 ♀♀: **British Columbia**: 1 ♀, Kirby Flats Rd., 50° 32' N 121° 43' W, 20 VIII 1998, J. Troubridge; 1 ♂, Watch Peak, 50° 28' N 116° 18' W, 2,500 m, 24 VII 1998, J. Troubridge; **Montana**: 1 ♂, 17 mi. S.W. of Kalispell, 3,800' [1,200 m], 23 VIII 1961, D. F. Hardwick; **Washington**: 1 ♀, same data as holotype; 1 ♂, Pierce-Yakima Co. Line, Chinook Pass at Pacific Crest Trail, 1,700 m, 14 VIII 1990, L. and A. Crabo; 1 ♂, Yakima Co., Bethel Ridge, 2,000 m, 22 VIII 1997, J. Troubridge; 1 ♀, same locality and collector, 18 VIII 1995; 1 ♂, 1 ♀, same locality and collector, 27 VIII 1998; 1♂, same locality, 3 IX 1997, L. Crabo; **Oregon**: 1 ♂, Jefferson Co., Green Ridge, Prairie Farm Meadow, larva collected 7 VII 1993, ex. *Spiraea douglasii* Hook, J. Miller.
Description. Males and females similar. Forewing length 15-17 mm. Antennae filiform; head, palpae, and scape charcoal gray; prothoracic collar charcoal gray basally, edged with white; thorax charcoal gray, with white scales in posterior tegulae and in dorsal tuft; abdomen gray. Dorsal forewing steel gray, median area posterior to cubital vein, postmedial space adjacent to subterminal line, and a spot in subterminal space at anal angle charcoal, median area anterior to cubital vein medium gray; basal, antemedial, and postmedial lines thick, even, black, antemedial line a laterally convex arc, postmedial line undulating; median shade charcoal, evident only anterior to cubital vein, postmedial line irregular, indistinct, evident only due to adjacent charcoal in postmedial space; terminal line black; thin black basal dash at base of cell, eight long black lines between veins from mid subterminal space to margin; claviform spot small, solid black, other spots absent; fringe medium gray, checkered with dark gray between veins. Dorsal hindwing white with black costal and anal margins, with broad sharply defined very dark gray terminal band; fringe gray basally, white terminally.
Male genitalia. Valve (Figure 3k) widest distally, 4x as long as wide, dorsal cucullus triangular; clasper relatively short, 2/5x as long as valve width, thorn-shaped, widest at the base. Vesica (Figure 2h) bends slightly to the left before turning 90° downward, relatively short and wide (2/3 as long as aedoeagus); a patch of short cornuti is present on the left side at mid vesica; a dense patch of long cornuti on right side extends from the base almost to the apex; a single, long, apical cornutus extends posteriorly perpendicular to vesica; small diverticulae are present on the left at the base and ventrally near the apex.
Female genitalia. Ovipositor lobes rounded, covered with setae; ductus bursae heavily

sclerotized; corpus bursae bisaccate with anterior chamber bulbous, tapered anteriorly, deeply furrowed with two elongate lateral signa and broadly connected to the irregular posterior chamber; small appendix bursae arises ventrally from posterior chamber and gives rise to ductus seminalis.

Diagnosis. This species cannot be confused with any other species in western North America. The closely related *O. piffardi* Walker (Figure 1q) occurs east of the Rocky Mountains. These species can be separated by the thoracic collar, which is black in *O. piffardi* and edged with white in *O. chalybdis*. In addition, the median area of the dorsal forewing of *O. piffardi* is black, while that of *O. chalybdis* is charcoal and medium gray with visible median band and claviform spot. Also, *O. chalybdis* has a black terminal line, absent in *O. piffardi*, and a checkered fringe, which is solid dark gray in *O. piffardi*. Internally, the apical cornutus of *O. chalybdis* is longer (1.5 mm) and more massive than that of *O. piffardi* (1.0 mm) (Figure 2g), and the clasper of *O. chalybdis* tapers evenly from base to apex, while that of *O. piffardi* (Figure 3l) is slightly swollen subbasally. The male genitalia of these North American species are closely similar to those of *O. senica* (Eversmann) which is widely distributed in eastern Eurasia.

Derivation of the name. The name is Latin, meaning steel, and refers to the shiny gray colour of the dorsal forewing.

Distribution and Habitat. *Oncocnemis chalybdis* has been collected at mid elevations (1,200-2,000 m) from the foothills of the Rocky Mountains in Alberta, westward to the east slopes of the British Columbia Coast Range and the Oregon and Washington Cascades. Larvae have been collected from on *Spiraea douglasii* Hooker (Miller, 1995; J. Troubridge) and reared to adults; however, *Spiraea densiflora* Nuttall and particularly *Spiraea stevenii* Schneider are usually the only *Spiraea* species present in its habitat.

The *O. figurata* group

Members of the *figurata* group have gray or gray-brown forewing colour, lack the ordinary forewing spots, have thin black forewing lines with the antemedial and postmedial lines joined across the median space by a straight black line, and lack a well defined dark terminal band on the dorsal hindwing. Four species of this group are found in the Pacific Northwest: *O. figurata, O. semicollaris* Smith (HT American Museum of Natural History [examined]), *O. ragani* Barnes, and *O. greyi* n. sp. *Oncocnemis figurata* is widely distributed east of the Cascade Mountains in Washington and Oregon. *Oncocnemis ragani* is limited to southwest Oregon. *Oncocnemis semicollaris* is found in the vicinity of the Gulf of Georgia and east of the Cascades from south-central British Columbia to central Oregon. The distribution of the new species, *O. greyi,* is contained in its description, below.

Key to the Pacific Northwest species of the *figurata* group

1. Head gray ..... *O. semicollaris*
- Head black 2
2. Basal dash absent. Terminal area of forewing gray-brown ..... *O. greyi*
- Basal dash present, extending from wing base to antemedial line. Forewing colour gray 3
3. Dorsal hindwing pearlescent white ..... *O. ragani*
- Dorsal hindwing gray ..... *O. figurata*

3. *Oncocnemis greyi* **sp. n.**
(Figures 1v, 2j, 3a)

Type Locality. Canada, British Columbia, E. end of Seton Lake, base of Mt. McLean.

Type material. Holotype male: Canada, British Columbia, E. end of Seton Lake, base of Mt. McLean, 5 VII 1996, J. Troubridge, in the CNC. Paratypes: 89 ♂♂, 23 ♀♀: **Washington**: 8 ♂♂, Stevens Co., Columbia R. Valley, 3.5 mi N. of Cedonia on Dissell Rd., 475 m, 22 VI 1990, L. Crabo; 2 ♂♂, 1 ♀, Kittitas Co., Reecer Creek at Johnson Cyn., 900 m, 20 VII 1991, L. Crabo; 1 ♀, Douglas Co., N. slope of Badger Mt. at Creek 3 mi ESE. of Orondo, 1,000 m, 18 VII 1992, L. Crabo; 2 ♂♂, Chelan Co., Entiat Range, Trib. to Swakam Creek, 2 mi S. of Chumstick Mt., 1,250 m, 30 V 1992, A. and L. Crabo; 1 ♂, Chelan Co., Icicle Creek Canyon 5 mi SW. of Leavenworth, 2 VII 1994, A. and L. Crabo; 1 ♂, [Columbia County], Dayton, 1,620' [494 m], 20 VII 1971, R. E. Miller; 1 ♂, 3 ♀♀, Okanogan County, Goat Wall, 2.1 mi [3.4 km] SE. of Lost River, 48.64°N 120.47°W, 2,480' [756 m], 25 VII 1997, L. Crabo; 4 ♂♂, 1 ♀, Okanogan County, Hart's Pass Rd., 1.5 mi [2.4 km] NW. of Cache Creek, 48.67°N 120.61°W, 4,800' [1,463 m], 24 VII 1997, L. Crabo; 1 ♂, 1 ♀, Okanogan County, Methow R. Valley, Lost River Rd. at Lost R., 48.65°N 120.50°W, 2,390' [728 m], 23-25 VII 1997, E., A., and L. Crabo; **Oregon**: 17 ♂♂, 1 ♀, Wheeler County, Blue Mountains, State Rte. 207 2 mi [3.2 km] W. of Bull Prairie, 44.96°N 119.70°W, 4,400' [1,341 m], 15 VII 1996, E. and L. Crabo; 1 ♂, 15 mi E. of Coquille, 29 VII 1965, K. Goeden; 1 ♀, Newberg, Yamhill Co., 15 VIII 1969, K. Goeden; 1 ♂, 8 mi S. of Enterprise, Wallowa Co., 1 VII 1968, K. Goeden; 2 ♂♂, 2 ♀♀, Eugene, Lane Co., 28 VI 1971, K. Goeden; 1 ♂, Eugene, Lane Co., 16 VIII 1972; 1 ♂, Spring Creek, Baker Co., 13 VII 1970, K. Goeden; 1 ♀, Spring Creek, Baker Co., 17 VII 1972; 1 ♂, 3 mi E. of Lakeview, Lake Co., 20 VI 1976, K. Goeden; 1 ♂, Warm Springs Res. nr. Mt. Jefferson, Jefferson Co., 19 VII 1969; 1 ♂, 5 mi W. of Mill City, N. Fork Santiam R., Hwy 22, Marion Co., 2 VII 1981; 1 ♂, Honey Creek nr. Glide, Douglas Co., 13 VI 1996; 1 ♀, vic. Firewood Rd., 4 mi W. of Oregon City, Clackamas Co., 22 VII 1975, S. G. Jewett Jr.; 1 ♂, vic. Firewood Rd., 4 mi W. of Oregon City, Clackamas Co., 13 VII 1975, S. G. Jewett Jr.; 1 ♂, vic. Bosky Dell Ln., 4 mi W. Oregon City, Clackamas Co., 14 VIII 1981, S. G. Jewett Jr.; 1 ♂, same locality and collector, 29 VII 1978; 1 ♂, Ochoco Mts. nr. summit, Hwy 26, Crook Co., 21 VII 1975, S. G. Jewett Jr.; 1 ♂, Blue Mts., Starkey Exp. For., 10 VII 1996; 1 ♂, North Ward Th., Lane Co., 8 VI 1995; 1 ♂, 1 ♀, same locality, 28 VI 1995; 2 ♂♂, 1 ♀, North Ward Th., nr. Lorane, Lane Co., 29 VI 1995; 1 ♂, Lane Co., 1 mi W. of Rainbow, 27 VI 1997, J. Troubridge; 2 ♂♂, Lane Co., Frissell Pt., 1506 Rd., 1,550 m, 13 VII 1996, J. Troubridge; **British Columbia**: 2 ♀♀, Kirby Flats Rd., ca. 25 km S. of Lillooet, 4 VII 1997, J. Troubridge; 1 ♂, 1 ♀, same locality and collector, 9 VIII 1997; 1 ♂, 5 km W. of Oliver, 30 VI 1996, J. Troubridge; 1 ♂, 1 ♀, Mt. Kobau, 1,200-1,800 m, 1 VIII 1997, J. Troubridge; 3 ♂, 1 ♀, Castlegar (Brilliant), 16 VI 1995, J. Troubridge; 1 ♂, 1 ♀, 5 km SE. of Okanagan Falls, J. Troubridge; 1 ♂, same locality and collector, 1-7 VII 1993; 1 ♂, same locality and collector, 5-10 VII 1990; 1 ♂, same locality and collector, 12-18 VIII 1990; 1 ♂, same locality, 23-31 V 1992, J. Troubridge and M. Gardiner; 2 ♂♂, same locality and collectors, 7-13 VI 1992; 1 ♂, same locality and collectors, 1-6 VI 1992; 1 ♂, same locality and collectors, 12-18 VII; 1 ♂, Lillooet, dunes E. side of Fraser R., 29 VI 1996, J. Troubridge; 3 ♂♂, E. end of Seton Lk., 13 VI 1996, J. Troubridge; 2 ♂♂, same locality and collector, 5 VII 1996; 1 ♂, 1 ♀, same locality and collector, 29 VI 1996; 1 ♂, same locality and collector, 7 VII 1995; 1 ♂, same locality and collector, 17 VII 1995; 1 ♂, same locality and collector, 3 VI 1995; 2 ♂♂, 1 ♀, same locality and collector, 23 VI 1995; 1 ♂, 3 mi [4.8 km] N. of Roosville, 6 VII 1991, J. and S. Shepard; 1♂, Monte Lake, 19 VI 1988, J. Shepard; 1 ♂, Riske Creek, Deer Park Ranch, Moon Road, 2,000' [610 m], Aud I. Fischer.

Description. Forewing length 12-14 mm. Antennae filiform, scape gray with black dorsum; head black; palpae very dark gray; prothoracic collar black basally, then light

gray, then slightly darker gray with dark scales with light gray tips; thorax same as adjacent collar; abdomen gray-brown. Dorsal forewing with gray, gray-brown, and scattered black scales, appearing light gray basally and near costa, gray-brown below cell, darker gray-brown towards the outer margin, and dark gray at costal margin; ordinary spots and median and subterminal lines absent; basal, antemedial, and postmedial lines even, black; antemedial line broad and thickened at costa, straight except for a slight angle where joined to the postmedial line by a straight black line across the median space between veins CuA2 and 1A+2A; postmedial line thin, thickened at costa, sinuous, prominently excurved opposite cell and straight posterior to line joining it to antemedial line; four to six smooth black dashes extend to outer margin between veins R4 and R5 to CuA1 and CuA2, that between M1 and M2 darkest and longest, extending from end of cell across postmedial line to margin, the others originate lateral to the postmedial line, the most posterior two lines variably present; fringe concolourous with the margin. Dorsal hindwing whitish-gray, blending to gray-brown toward the margin and costa; postmedial line dark brown; veins dark brown; fringe brown basally, white terminally. Males and females similar except that the dorsal hindwing of the female is darker gray.

Male genitalia. Uncus short, equal to valve width. Valve (Figure 3a) 4x as long as wide, widest proximal to clasper and tapered to cucullus beyond clasper, cucullus bluntly pointed at dorsal margin; clasper 2/3x as long as valve width ending well below costa, talon-like, mid-section widened mesially, apical spine directed dorsolaterally. Vesica (Figure 2j) bends gently downward to the right and then curves to the left; a small basal field of spine-like cornuti is located on the left, a large field of dense spine-like cornuti on the middle half of the vesica starts dorsally and forks ventrad to the right and dorsad to the left, vesica apex with small bundle of long ventral cornuti and a stout dorsally-projected cornutus.

Female genitalia. Ovipositor lobes rounded, covered with setae; ductus bursae sclerotized; corpus bursae bisaccate with bulbous anterior chamber, tapered toward tip and connected by a long narrow neck to the bean-shaped posterior chamber; appendix bursae arises from posterior chamber and sweeps around 180° to ductus seminalis.

Derivation of the name. We name this species in honour of our friend and colleague L. Paul Grey, late of Lincoln, Maine.

Diagnosis. *Oncocnemis greyi* is distinguished from the other members of this group by the presence of gray-brown scales of the dorsal forewing, absent in the other species. In addition, the antemedial line is more or less straight (ca. 170°), while in *O. figurata* (Figure 1t) and *O. semicollaris* Smith (Figure 1u), the line forms an angle of about 130°. The antemedial line of *O. ragani* is not as deeply angled as that of *O. figurata* and *O. semicollaris*, and can resemble that of *O. greyi*, but the dorsal hindwing of *O. ragani* is pearlescent white and that of *O. greyi* is gray-brown.

Distribution and Habitat. *Oncocnemis greyi* has been found in dry forests from the southern interior of British Columbia, south through central Washington and central Oregon. It occurs sympatrically with *O. semicollaris* at some locations and is usually the more common of the species. Most Pacific Northwest specimens of *O. greyi* have previously been misidentified as *O. semicollaris* in museums.

4. *Oncocnemis saxatilis* **sp. n.**
(Figures 1f, 2l, 3c)

Type Locality. USA, Oregon, Joseph.

Type material. Holotype male: Oregon, Joseph, 6 IX 1950, J. L. Sperry, in the CNC. Paratypes: 7 ♂♂: **Washington**: 3 ♂♂, Douglas County, S. end Jameson Lake, 27 IX 1996, J. Troubridge; 1 ♂, Douglas County, S. end Jameson Lake, 23 IX 1996, J. Troubridge; **Oregon**: 2 ♂♂, Crook County, 5 mi S. of Suplee, 7 IX 1962, K. Goeden; 1 ♂, Joseph, 2

IX 1950, J. L. Sperry.

Description. Forewing length 13-15 mm. Antennae filiform, scape white; head, palpae, prothoracic collar and thorax with a mixture of black, brown, and white scales that gives an overall gray appearance; abdomen with mixture of white and dark gray scales, appearing gray. Dorsal forewing dark fuscous gray with a grizzled, intricate pattern, nearly white in subterminal space adjacent to reniform; basal dash black; lines except subterminal line black, basal line angled at radial vein, antemedial line prominently undulating, median shade touching reniform spot, then parallel to postmedian line to posterior margin, postmedial line undulating, obsolete across cell, subterminal line white, jagged, preceded by a series of prominent black wedges between veins; spots thin, black, filled with white with brown and dark gray centres; orbicular spot oval, with centre dark gray; reniform spot large, its lateral portion faint so that white filling appears fused to pale adjacent area in subterminal space, central filling mostly light brown; claviform spot large, its central filling mostly brown; fringe dark gray basally, checkered with black and light gray. Dorsal hindwing cream, darker gray basally, with well-defined broad marginal band and a dark gray discal lunule; fringe black basally, white terminally.

Male genitalia. Valve (Figure 3c) atypical for genus, 5x as long as wide, widest at clasper where costal margin becomes dorsally convex (straight or concave in most other *Oncocnemis*), tapered beyond clasper to a 0.12 mm long apical spine at ventral cucullus; corona weak; clasper heavily sclerotized, thin, spine-like, 2/3x as long as valve width without reaching costa, located 3/4 of the way from base to apex near proximal cucullus. Aedoeagus (Figure 2l) bent ventrad at midpoint; vesica bent 130° dorsad at base, then straight, equal to aedoeagus in length, with a small right-sided basal diverticulum; a wide ribbon of sparse, spine-like cornuti runs the full length of the ventral vesica; a large patch of dense, long cornuti is positioned centrally on the dorsal surface; a single apical cornutus on the right side extends dorsad.

Female genitalia. Unknown.

Derivation of the name. The name is from Latin and means "living among rocks". This species occurs in lithosol habitats.

Diagnosis. *Oncocnemis saxatilis* is closely related to *O. kelloggii* H. Edwards (HT AMNH [examined]). It is distinguished from *O. kelloggii* (Figure 1g), which occurs in the Sierra Nevada, by its dark gray dorsal forewing, which in *O. kelloggii* is light blue-gray, and by the appearance of the prominent forewing white spot which is transected by the postmedial line in *O. kelloggii* but not in *O. saxatilis*. The dark basal suffusion of the dorsal hindwing of *O. kelloggii* extends to the discal lunule, but falls well short of the discal lunule in *O. saxatilis*. The scales on the thoracic collar of *O. kelloggii* are narrow and hair-like, while those of *O. saxatilis* are narrow basally but fan out towards the apex to become many times wider than their base. Internally, the vesica of *O. saxatilis* has a small basal diverticulum, which is absent in *O. kelloggii* (Figure 2m).

Oncocnemis saxatilis resembles *O. sagittata* which is known from Lake County, Oregon, in the Pacific Northwest. In *O. sagittata* the hindwing discal dot is absent from the dorsal side and is punctate ventrally, while that of *O. saxatilis* is prominent, especially on the ventral side.

The shape of the distal valve and the shape and position of the clasper of *O. saxatilis* (Figure 3c) and *O. kelloggii* are unusual for the genus. The higher classification of these species is beyond the scope of this paper.

Distribution and Habitat. *Oncocnemis saxatilis* is known from the Columbia Basin at Moses Coulee, Douglas County, Washington, and from eastern Oregon at Suplee, Crook County, and Joseph, Wallowa County. Where known, the habitat is sagebrush steppe with lithosol.

The *O. tenuifascia* group

Members of the *tenuifascia* group are small (forewing length 10-14 mm), have a mixture of gray, white, and tan scales on the forewing producing a mottled appearance with medium to dark gray or brown ground colour, have a well-defined, scalloped, postmedial line which is black with an adjacent pale area laterally and is prominently laterally convex at the cell, and black discal dot and terminal band of the dorsal hindwing. Three species of this group are found in the Pacific Northwest: *O. tenuifascia* (HT Michigan State University [photograph examined]), *O. parvanigra* Blackmore (HT Canadian National Collection [examined]), and one new species, *O. mus*. *Oncocnemis tenuifascia* occurs in arid sagebrush steppe habitat in mid and late September while *O. mus* is found at mid to high elevation earlier in the year. The easily recognizable *O. parvanigra* is found at high elevations in the Cascade Mountains as far south as Lane County, Oregon, but occurs at lower elevations in southern British Columbia. It has been collected from late July to late September. A key for separating these species by wing markings is presented.

Key to the adults of the *O. tenuifascia* group

1. Distinct black median line transects discal lunule on ventral hindwing; forewing length 10-11mm 2
- Ventral hindwing with distinct black discal lunule, black median line absent; forewing length 12-14mm ..... *O. parvanigra*
2. Ground colour of forewing brownish, forewing fringe without checkered pattern. ..... *O. mus*
- Ground colour of forewing light to medium gray, forewing fringe distinctly checkered white and dark gray ..... *O. tenuifascia*

5. *Oncocnemis mus* **sp. n.**
(Figures 1h, 1j, 2d, 3j)

Type Locality. USA: Washington, Table Rock, Columbia Co., 46° 01' N 117° 54' W.
Type material. Holotype male: Washington, Table Rock, Columbia Co., 46° 01' N 117° 54' W, 1,900 m, 14 VIII 1998, J. Troubridge, in the CNC. Paratypes, 125 ♂♂, 4 ♀: **British Columbia**: 1 ♂, Watch Peak, west of Invermere, 23 VII 1994, J. Troubridge; **Washington**: 114 ♂♂, 1 ♀, same data as holotype; 5 ♂♂, 1 ♀, Table Rock, [Columbia County], 10 VIII 1967, 6,000' [1,850 m], R. E. Miller; 1 ♀, Dayton, 1 IX 1957, 6,500' [2,000 m], R. E. Miller; 2 ♂♂, Oregon Butte, 6,300' [1,920 m], 3 IX 1966, R. E. Miller; **Oregon:** 3 ♂, 1 ♀, Wallowa Co., Blue Mts., 45° 59' N 117° 53' W, 14 VIII 1998, J. Troubridge.
Description. Males and females similar. Forewing length 10-11 mm. Antennae filiform, dorsal surface striped black and brown; head, palpae, scape, prothoracic collar, thorax, and abdomen brown. Dorsal forewing mottled brown and gray-brown; lines black, heaviest at costa and trailing margin: basal line laterally convex; antemedial line undulating, edged basally with pale brown; median shade dark gray, diffuse; postmedial line distinct, weakly scalloped, laterally convex portion opposite cell more rounded than in *O. tenuifascia*, edged distally with beige; subterminal line irregular, indistinct, preceded by variable black shading, heaviest near costa, and a series of black chevrons between veins; terminal line scalloped, slightly lighter brown than ground colour, enclosing a series of black spots at margin; spots thin, black, filled with lighter brown than ground colour; claviform incomplete; orbicular elliptical; reniform spot interrupted at top and bottom; orbicular and reniform spots connected by a thin black line; fringe dark brown, weakly checkered with black. Dorsal hindwing beige, dark gray basally, with distinct black discal lunule

transected by black median line; wide marginal band black; fringe gray basally, white distally.

Male genitalia. Valve (Figure 3j) 4x as long as wide, widest just beyond clasper, then gently tapered to rounded cucullus; clasper located at mid-valve, 3/4x as long as valve width reaching costa, talon-like, mesial mid-section slightly widened. Vesica (Figure 2d) 2x as long as aedoeagus, sweeps 90° ventrad and then 90° to the left, with a small basal diverticulum on left; a ribbon of cornuti extends from dorsal surface at diverticulum along the right side to the second bend, and then ventrad to the apex, with cornuti becoming longer and denser distally; a ventral patch of long, dense cornuti extends from the second bend to apex; at apex a single, coarse apical cornutus points ventrad and a small bundle of cornuti is projected dorsad.

Female genitalia. Ovipositor lobes rounded, covered with setae; a corona of short spines surrounds the ovipositor lobes about 0.1 mm from tip, these spines are produced at 90° to the abdomen; a sclerotized plate occurs on ventral surface of ductus bursae at ostium bursae, ductus bursae otherwise not heavily sclerotized; corpus bursae 2x as long as wide, produced slightly ventrad and to the right at the anterior end which gives rise to ductus seminalis; small appendix bursae (0.05 x 0.2 mm) is located ventrally near ductus bursae.

Derivation of the name. The name is from Latin, means mouse, and refers to the small size and brown colour of the adults.

Diagnosis. *Oncocnemis mus* is very similar to *O. tenuifascia* and is distinguished from it predominantly by the brown forewing colour in *O. mus*. In addition, there are several subtle differences in maculation. These include: dark scales between the orbicular and reniform spots form a distinct line in *O. mus*, but not in *O. tenuifascia*; the laterally convex portion of the postmedial line is relatively rounded in *O. mus* and more truncate in *O. tenuifascia*; the pale scales lateral to the subterminal line are wider in *O. tenuifascia*, especially in the fold; and the checkering of the fringe is more evident in *O. tenuifascia*.

Distribution and Habitat. *Oncocnemis mus* has been collected on dry ridges above 1,500 m in the Blue Mountains of southeastern Washington, and the Purcell Mountains, west of Invermere, British Columbia, at 2,500 m.

6. *Oncocnemis parvacana* **sp. n.**
(Figures 1a, 2k, 3d)

Type Locality. USA, Washington, Benton Co., Hanford Site, sand dunes W. of Columbia R.

Type material. Holotype male: Washington, Benton Co., Hanford Site, sand dunes W. of Columbia R., N46°1.369' W119°21.192', 3 IX 1997, L. Crabo and R. S. Zack, in the CNC. Paratypes: 29 ♂♂; 21 ♀♀: **Washington**: 1 ♂, same as type locality, 7 IX 1996, R. S. Zack and D. Strenge; 2 ♂♂, same locality, 27 IX 1996, R. S. Zack, P. McGhee, and C. Nobbs; 7 ♂♂, same locality, 18 IX 1996, R. S. Zack; 1 ♂, 16 ♀♀, same locality, 9 X 1996, R. S. Zack; 4 ♂♂, 30 mi SE. of Quincy, Frenchman Hills, 22 IX, 1960, W. C. Cook; 1 ♀, 5 mi N. of Pasco, 27 IX, 1960, W. C. Cook; 2 ♂♂, 2 ♀♀, Grant County, 1.5 mi N. of Wanapum dam on Hwy 243, 225 m, 22 IX 1990, L. Crabo; 4 ♂♂, 2 ♀♀, Grant County, 2 mi N. of Wanapum dam on Hwy 243, 17 IX 1994, J. Troubridge; 1 ♂, Benton County, Hanford Site, sand dunes W. of Columbia R., N46°31.369' W119° 21.192', 7 Sept, 1996, R. S. Zack and D. Strenge; 1 ♂, same locality, 3 IX 1997, L. Crabo and R. S. Zack; **Oregon**: 8 ♂♂, Biggs, 2 X 1945, E. C. Johnston.

Description. Males and females similar. Forewing length 9-11 mm. Antennae filiform, scape white; head and thorax gray with white-tipped scales; palpae white basally, distal second and third segments gray; prothoracic collar gray, thinly edged with white; abdomen gray-brown. Dorsal forewing with gray, white and light gray-brown scales, appearing

mottled medium gray, darkest in median area and toward lateral margin, and light gray-brown in subterminal space; basal line absent; antemedial line absent or weak, dark gray when present; median shade weak, dark gray, visible near costa; postmedial and subterminal lines irregular, dark on veins, evident mainly as light filling, subterminal line preceded by dark gray scales; terminal line scalloped, pale; margin with a series of black dots between the veins; orbicular and reniform spots thin, black, filled with white and light brown and central black spots, orbicular elliptical, reniform spot incomplete; fringe light gray, checkered dark gray between veins. Dorsal hindwing off-white, buff in females, light gray basally, with weak gray discal dot and black, sharply-demarcated terminal band; fringe black basally, white terminally.

Male genitalia. Valve (Figure 3d) 3.4x as long as wide, widest slightly beyond clasper, dorsal cucullus a blunt point; clasper 2/3x as long as valve width reaching costa, talon-shaped, mid-section equal to base in width. Vesica (Figure 2k) 2x as long as aedoeagus, with 90° bend dorsad 1/3 of distance from base to apex, then a 180° counterclockwise spiral to end posterior and dorsal to distal aedoeagus; a patch of long, dense, spine-like cornuti is located on the left side of the distal half of the vesica; a ribbon of short, sparse cornuti extends along the right side from the dorsal base to the apex with the cornuti becoming denser and longer distally; a small patch of apical cornuti projects dorsad, and a single, heavy apical cornutus projects to the left.

Female genitalia. Ovipositor lobes rounded, covered with setae; a corona of short spines surrounds the ovipositor ca. 0.1 mm from apex, these spines are produced at 90° to the abdomen; ductus bursae short (0.5 mm); corpus bursae stomach-shaped with small, sac-like appendix bursae located dorsally near ductus bursae; anterior portion of corpus bursae forms a cone-like chamber which bends backward on the ventral surface; ductus seminalis arises from the tip of this cone.

Derivation of the name. The name is from Latin and refers to the small size and gray colour of this species.

Diagnosis. In southern Oregon, *O. satanella* n. sp. (Figure 1b) superficially resembles *O. parvacana*. In *O. parvacana*, the vesica spirals counterclockwise and lacks diverticulae while that of *O. satanella* (Figure 2o) spirals clockwise and has a small dorsal diverticulum. Externally, the dorsal forewing of *O. parvacana* is darker than that of *O. satanella* with the postmedial white line which is present in *O. satanella* reduced or absent. Also, the submarginal black lines between the veins of *O. satanella* are absent or much reduced in *O. parvacana*.

Distribution and Habitat. *Oncocnemis parvacana* has been collected in dune habitats along the Columbia River from near Vantage, Washington to the eastern Columbia Gorge at Biggs, Oregon. *Oncocnemis parvacana* is part of an endemic noctuid fauna from this dune system, which also includes *Euxoa hardwicki* Lafontaine, *Copablepharon hopfingeri* Franclemont, and two additional undescribed species of *Copablepharon* Harvey.

7. *Oncocnemis satanella* **sp. n.**
(Figures 1b, 2o, 3b)

Type Locality. USA, Oregon, Malheur Co., Negro Rock Canyon at Sand Hollow.

Type material. Holotype male: Oregon, Malheur Co., Negro Rock Canyon at Sand Hollow, 25 IX 1997, J. Troubridge and L. Crabo, in the CNC. Paratypes: 15 ♂♂, 4 ♀♀: **Oregon**: 4 ♂♂, Malheur Co., 12 mi S. of Vale, K. J. Goeden, 2 X 1970; 2 ♂♂, 4 ♀♀, same data as holotype; 4 ♂♂, Sand Hollow, 800 m. 43° 48' N 117° 22' W, 27 IX 1998, J. Troubridge; 1 ♂, Lake County, dunes 2 mi N. of Alkali Lk., 6 IX 1997, J. Troubridge; 3 ♂♂, same locality and collector, 14 IX 1998. **Wyoming**: 1 ♂, 7 mi NE. of Lyman, 6,400' [1,970 m], 24 VIII 1964, D. F. Hardwick.

Description. Males and females similar. Forewing length 11-12 mm. Antennae filiform, dorsal surface with alternating rows of white and black scales, scape white; head and thorax covered with white-tipped dark gray scales, appearing gray with faint dark and white bands on prothoracic collar; palpae white basally, gray distally; abdomen gray. Dorsal forewing with a mixture of gray, dark gray, white, and beige scales, appearing mottled, medium gray, lighter gray with luteous tint in postmedial space; basal line thin, black; antemedial line undulating, dark gray, double, filled with lighter gray and light-brown gray, postmedial band scalloped, double, dark gray, outer line indistinct, filled with white; subterminal line white, irregular, incomplete, evident between veins and preceded by a series of black wedges in cells R4, R5, M1, M2, M3, CuA1, and CuA2; terminal line scalloped, faint, luteous, followed by terminal black chevrons between veins; median shade faint, dark gray; orbicular spot ovoid, black, filled with white and a prominent central black spot; reniform spot incomplete, double, black, inner portion thickest posteromedially, filled with white between lines and in centre; claviform spot small, black; fringe light gray, checkered with black between veins. Dorsal hindwing off-white, light gray basally, with faint gray discal dot and sharply demarcated, wide black terminal band; fringe black basally, white terminally.

Male genitalia. Valve (Figure 3b) 4.3x as long as wide, widest in middle slightly beyond clasper, dorsal cucullus forms a blunt point; clasper 3/4x as long as valve width reaching costa, talon-like, medial mid-section widened. Vesica (Figure 2o) 1.3x as long as aedoeagus, projects ventrad from aedoeagus and spirals gently clockwise, with a tiny ventral and a larger, bump-like right-sided subbasal diverticula; sparse cornuti extend from the dorsal base to cover the larger of the subbasal diverticula; a patch of long, dense, spine-like cornuti is present on the distal half of the ventral vesica; a patch of dense cornuti is present on the dorsal distal half of the vesica; ventral apex with a short, stout cornutus and a bundle of long, thin cornuti.

Female genitalia. Ovipositor lobes rounded, covered with setae; a corona of short spines surrounds the ovipositor ca. 0.1 mm from apex, these spines are produced at 90° to the abdomen; ductus bursae has small, circular diverticulum on ventral surface from which ductus seminalis arises; elongate, deeply furrowed appendix bursae (ca. 1/3x as long as corpus bursae) arises from right side of corpus bursae.

Derivation of the name. The type locality is hot, dry, desolate, and home to the greatest concentration and diversity of venomous creatures that we have ever experienced, thus the name, from Greek, which means "little Satan".

Diagnosis. The most closely related species is *O. balteata* Smith (HT American Museum of Natural History [examined]) (Figure 1c), a Great Plains species not known to occur in the Pacific Northwest. *Oncocnemis satanella* is separated from it by its gray thorax, which is reddish brown in *O. balteata*, the orange-brown colour of the submarginal area of the dorsal forewing of *O. balteata*, which is gray in *O. satanella*, and the black streaks between the veins on the distal forewing of *O. satanella*, which are absent in *O. balteata*. In eastern Oregon, *O. satanella* superficially resembles *O. parvacana*, which occurs further to the north in the Columbia Basin. They are distinguished from each other by the characters given under *O. parvacana*, above.

Distribution and Habitat. *Oncocnemis satanella* is known only from the two localities in the Basin and Range province of southeastern Oregon and a single locality in southwestern Wyoming (west of the Continental Divide). Both of the Oregon localities are in habitats with sandy soil. The Wyoming habitat is unknown.

8. *Oncocnemis tartarea* **sp. n.**
(Figures 1l, 2a, 3g)

Type Locality. USA, Oregon, Malheur Co., Negro Rock Canyon at Sand Hollow.
Type material. Holotype female: Oregon, Malheur Co., Negro Rock Canyon at Sand Hollow, 25 IX 1997, J. Troubridge and L. Crabo, in the CNC. Paratypes: 2 ♂♂: **Oregon**: Malheur Co., 12 mi SW. of Vale, 2 X 1970, K. Goeden.
Description. Males and females similar. Forewing length 13.5-14 mm. Antennae filiform, scape white; palpae white with a few gray scales on lateral first and second segments; frons white, top of head white with a few fawn scales; prothoracic collar weakly striated, white thinly edged with brown basally, then fawn, white, brown, and white; thorax off-white with occasional fawn and black scales, a weak fawn dorsal tuft at junction with abdomen; abdomen off-white with scattered gray scales. Dorsal forewing with white, light yellow-brown, fawn, brown-gray, and black scales, appearing hoary gray-brown, darkest at apex in subterminal space, with lighter off-white areas basad to antemedial line, posterior to the orbicular spot in the median area, in the postmedial space between posterior margin and CuA1 and anterior to M2, and at anal angle in subterminal space; veins lateral to postmedial line black, veins medial to postmedial line ground colour, not pale; basal line thin, black; antemedial and postmedial lines thin, black: antemedial line zigzag, oriented perpendicular to posterior margin; postmedial line scalloped, laterally convex from costa to fold, then nearly straight to posterior margin, followed laterally by a thin white line; median shade dark gray, strongest at costa; postmedial line irregular, light gray, preceded by dark gray wedges between veins; terminal line even, black; claviform, orbicular and reniform spots dark gray, filled with white with pale fawn centres: orbicular spot ovoid; reniform spot quadrate, widest posteriorly; claviform elongate, nearly reaching subterminal line; fringe white basally, dark gray terminally. Dorsal hindwing off-white with scattered gray scales basally along cubitus; subterminal line thin, incomplete, evident mostly at veins; terminal band wide, sharply demarcated, black; fringe immaculate white.
Male genitalia. Valve (Figure 3g) 3.7x as long as wide, widest at clasper with a slight constriction at base of cucullus, cucullus projects dorsad and is rounded; clasper 4/5x as long as valve width, extending to costa, mid-section slightly widened. Vesica (Figure 2a) bends gently to the right at base and then sweeps ventrad and to the left; a small patch of sparse, short cornuti extends from the base to mid vesica on dorsal surface; a dense patch of long cornuti extends from mid vesica to the apex on the right; a dense patch of medium-length cornuti extends from the left mid vesica to the dorsal apex; apically, a spine-like cornutus is directed posteriorly and a bundle of long cornuti is directed ventrad.
Female genitalia. Ovipositor lobes rounded, covered with setae; a corona of short spines surrounds the ovipositor ca. 0.1 mm from apex, these spines are produced at 90° to the abdomen; ductus bursae short and broad (0.8 x 0.8 mm) with sclerotized ventral plate; corpus bursae unisaccate, stomach-shaped, its anterior portion forms a cone-like chamber which bends posteriorly to the right to join ductus seminalis at the tip.
Derivation of the name. This species is known only from the type locality and was collected with *O. satanella*, above. We feel that the name, which is from Latin and roughly means "of the lower level of Hades", refers appropriately to the type locality.
Diagnosis. *Oncocnemis tartarea* is a member of the *O. levis* Grote group, which is characterized by the distally tapered and rounded male valve. Members of this group are gray-brown or brown with well-defined dorsal forewing markings, and a dark terminal band on the dorsal hindwing. The adults are found in steppe habitats in the fall during the flowering of rabbitbrush (*Crysothamnos nauseosus* (Pall.)). *Oncocnemis tartarea*, *O. levis* (Figure 1m), *O. simplex* and *O. sanina* Smith (Figure 1k) are the members of this group that are known from the Pacific Northwest. Internally, *O. tartarea* can be separated from

O. levis by the vesica, which is produced at a 90° angle to the right in *O. levis*, gently to the right and then downward to the left in *O. tartarea*, and by the valve, which is narrowed in the distal half in *O. levis* but only in the distal quarter or third in *O. tartarea*. Externally, *O. tartarea* is paler coloured than the other Pacific Northwest species. It lacks pale scales along the veins and dark spots in the subterminal area which are present in the other species. It is most similar to *O. sanina* (Figure 1k) which also has an off-white hindwing, but can be separated from it the dark brown forewing and forewing fringe colour, lighter whitish in *O. tartarea*, and the characteristic elongate elliptical orbicular spot of *O. sanina*. *Oncocnemis iricolor* Smith, which occurs with *O. tartarea* at the type locality, is also similar to it and has a pure white hindwing fringe. It can be separated from *O. tartarea* by the presence of charcoal gray patches in the subterminal space of the dorsal forewing.

Distribution and habitat. *Oncocnemis tartarea* is known only from the type locality, in the sagebrush desert of eastern Oregon. The site is situated in the Snake River drainage on sandy soil. It has been collected in late September and early October.

9. *Oncocnemis goedeni* **sp. n.**
(Figures 1s, 2f, 3h)

Type Locality. USA, Oregon, Jackson County, Medford.

Type material. Holotype male: Oregon, Jackson Co., Medford, 28 VIII 1970, K. J. Goeden, in OSU. Paratypes: 9 ♂♂, 5 ♀♀: **Oregon**: 4 ♂♂, same data as holotype; 1 ♂, same locality and collector, 26 VIII 1969; 1 ♂, same locality and collector, 27 VIII 1970; 1 ♂, same locality and collector, 10 IX 1965; 1 ♂, same locality and collector, 30 VIII 1969; 1 ♂, same locality and collector, 23 VIII 1970; 1 ♀, Grants Pass, Josephine Co., 6 IX 1968, K. Goeden; 1 ♀, same locality and collector, 10 IX 1968; **California**: 1 ♀, La Tuna Cyn., Los Angeles Co., 23 IX 1949, W. H. Evans; 1 ♀, same locality and collector, 21 IX 1949; 1 ♀, W. Fork San Gabriel Cyn., 1,600', Los Angeles Co., 29 X 1965.

Description. Forewing length 16-17 mm. Antennae filiform; head, scape, prothoracic collar, thorax, and dorsal forewing light brown; abdomen slightly lighter brown. Dorsal forewing lines and spots dark brown, filled with ground colour; basal, antemedial, and postmedial lines double, these and the median shade widest at costa; antemedial line undulating, oblique, closer to base at costa than at posterior margin; median shade and scalloped postmedial line laterally convex at cell; postmedial line irregular, indistinct, evident due to proximal dark shade; orbicular elliptical; reniform relatively wide; claviform short; fringe brown. Dorsal hindwing white in the male, light brown in the female, darker at costa and medial margin; veins and relatively narrow terminal band light brown; fringe off-white, with a narrow light brown line at base.

Male genitalia. Valve (Figure 3h) nearly straight, turned slightly dorsad at neck of cucullus, 4.5x as long as wide, widest between clasper and cucullus where posterior margin is thickened, cucullus rounded; clasper 3/4x as long as valve width without reaching costa, talon-like, base narrow and mid-section widened mesially. Vesica (Figure 2f) 2x as long as aedoeagus, bent 90° ventrad at base, slightly to the left at mid-length, and then slightly to the right and ventrad, with a small basal diverticulum on the left; a ribbon of long cornuti extends on ventral surface from the diverticulum to the apex; a patch of dense cornuti is present on the left at mid-vesica; a bundle of ca. seven apical cornuti, as long as the aedoeagus, extend posteroventrally beyond apex.

Female genitalia. Ovipositor lobes rounded, covered with setae; ductus bursae very long (3 mm) and narrow (0.5 mm); corpus bursae large (7.0 x 2.0 mm); appendix bursae large (3.0 x 1.5 mm), furrowed, bulbous, connected dorsally to the corpus bursae via a short, narrow neck; ductus seminalis arises from the anterior corpus bursae.

Derivation of the name. We take pleasure in naming this species in honour of Mr. Ken

Goeden, who collected all of the known Pacific Northwest specimens.

Diagnosis. The brown forewing with faintly outlined spots and white hindwing with brown marginal band are characteristic of *O. goedeni*. Two other Pacific Northwest *Oncocnemis* species, *O. phairi* McDunnough and *O. glennyi* Grote, have relatively uniform brown forewing colour; however, the basal area of the dorsal hindwing of these species are light brown, not white as in male *O. goedeni*, and their dorsal forewings are less heavily marked than that of *O. goedeni*. Several *Euxoa* Hübner species, including *Euxoa terrena,* are superficially similar to *O. goedeni* but are easily separated from it by generic characters, including the lack of a foretibial spine. *Lepipolys behrensi* (Grote), a species from southwestern United States not known from the Pacific Northwest, is also similar (including the light two-toned hindwing). Its forewing scales are unusual in that they are broadly triangular so that the forewing resembles a shake roof when magnified, while those of *O. goedeni* are typically shaped.

Distribution and Habitat. In Oregon *O. goedeni* is known from two sites in the Siskiyou Mountains: Grant's Pass and Medford. The exact habitat is unknown as these areas have a number of different biotopes, including oak prairie, riparian areas along the Rogue River, dry, mixed deciduous and coniferous forests, and serpentine barrens.

Revised Pacific Northwest *Oncocnemis*.

1. *Oncocnemis major* Grote **stat. rev.**
(Figures 1n, 2i, 3f)

Oncocnemis major Grote, 1881: p. 33; Hampson, 1906: p. 175; Barnes and McDunnough, 1917: p. 57; McDunnough, 1938: p. 80.
Oncocnemis riparia major, McDunnough, 1941: p. 172; Hodges *et al.*, 1983: p. 147.

Type Locality. Colorado.

Type material. Lectotype male, in the United States National Museum [examined]. The type is labelled [*Oncocnemis major* Grote Type; Lectotype *Oncocnemis major* Grote by R. W. Poole; Col. [Colorado]; Type No. 33862 U.S.N.M.; Genitalia Slide By USNM 37658]. This specimen is worn and lacks the abdomen and one antenna.

Diagnosis. *Oncocnemis major* can be separated from *O. riparia* by the claviform spot, which in *O. riparia* is usually filled with white scales and in *O. major* is gray and indistinct, and by the black streaks surrounded by white scales in the submargin of the dorsal forewing of *O. riparia*, which are absent in *O. major*. Internally, the clasper of *O. major* is wider than that of *O. riparia*, and the distal end of the valve of *O. riparia* forms the widest part of the valve, while that of *O. major* is usually widest at mid-section.

Distribution and Habitat. *Oncocnemis major* is widely distributed in the Pacific Northwest, but is uncommon. In British Columbia, *O. major* has been found in arid areas of the Fraser and Okanagan River basins. In Washington, it has been found near Mazama in Okanogan County, near Brewster in Douglas County, and in the foothills of the Blue Mountains. In Oregon, it has been found in arid habitats along the John Day River in the east-central portion of the state and near Klamath Falls in the south. In British Columbia, it is usually collected in association with dense stands of *Penstemon fruticosus* (Pursh), which might be its foodplant.

Remarks. Our investigation of *O. riparia* has shown that several similar species are currently placed under this taxon. A revision of the entire species complex is beyond the scope of this paper; however, we recognize *O. major* Grote as distinct from *O. riparia* (HT Michigan State University [examined]). *Oncocnemis riparia* occurs in eastern North America and is associated with sand dunes and beaches.

2. *Oncocnemis extremis* Smith **stat. rev.**
(Figures 1o, 2b, 3i)

Oncocnemis extremis Smith, 1890: 30; Smith, 1893: p.160; Dyar, 1902: p. 124; Hampson, 1906: p. 168; Barnes and McDunnough, 1917: p. 56; Blackmore, 1927: p. 23.
Oncocnemis chorda extremis Smith; McDunnough, 1938: 80; Jones, 1951: 69; Hodges *et al.*, 1983: 147.

Type Locality. "N. W. British Columbia". The holotype was collected along the railroad, probably in the Thompson or Fraser River canyons between Kamloops and Lytton.
Diagnosis. *Oncocnemis extremis* can be separated from the closely related *O. chorda* (Grote) (Figure 1p) by the median shade of the dorsal forewing, which in *O. chorda* is weak below the costa and approaches the antemedial line only at the posterior margin, while that of *O. extremis* is wide, prominent at posterior margin, and fused to the antemedial line in proximity to the cubital vein and at the posterior margin. The dorsal forewing of *O. extremis* is much more heavily suffused with black than that of *O. chorda* and has a less regular postmedial line and a darker distal area. Internally, the vesica of *O. chorda* (Figure 2c) bends ventrad and to the left, while that of *O. extremis* (Figure 2b) is nearly straight beyond its basal bend. Differences between the valves are subtle. In *O. extremis*, the width of the valve is more or less uniform (Figure 3i), while that of *O. chorda* is slightly narrowed at the base.
Distribution and Habitat. In British Columbia, *O. extremis* has been found at low to mid elevations, in arid areas around Lillooet, Osoyoos, and the Kootenays. In Washington and Oregon, it occurs on dry ridges in the Cascades to ca. 2,500 m. It is associated with *Penstemon* species, particularly *P. fruticosus,* which might be its foodplant.

Oncocnemis chorda is found at low and mid elevations as far north as Yakima County, Washington and is less common than *O. extremis*. It is most often found in habitats with basalt cliffs. *Oncocnemis extremis* and *O. chorda* are sympatric at Bethel Ridge, Yakima County, Washington, where *O. extremis* appears earlier in the season than *O. chorda*, although both species fly together until early September.

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Figure 1. Photographs of adults of the genus *Oncocnemis* Lederer. **a)** *O. parvacana* ♂; **b)** *O. satanella* ♂; **c)** *O. balteata* ♀; **d)** *O. coprocolor* ♂; **e)** *O. terminalis* ♀; **f)** *O. saxatilis* ♂; **g)** *O. kelloggii* ♀; **h)** *O. mus* ♂ (Watch Peak, British Columbia); **i)** *O. tenuifascia* ♀; **j)** *O. mus* ♂ (Table Rock, Washington); **k)** *O. sanina* ♂; **l)** *O. tartarea* ♂; **m)** *O. levis* ♂; **n)** *O. major* ♂; **o)** *O. extremis* ♀; **p)** *O. chorda* ♂; **q)** *O. piffardi* ♀; **r)** *O. chalybdis* ♀; **s)** *O. goedeni* ♀; **t)** *O. figurata* ♂; **u)** *O. semicollaris* ♀; **v)** *O. greyi* ♂.

Figure 2. Aedoeagae of male *Oncocnemis* species with vesicas everted: **a)** *O. tartarea*; **b)** *O. extremis*; **c)** *O. chorda*; **d)** *O. mus*; **e)** *O. coprocolor;* **f)** *O. goedeni*; **g)** *O. piffardi*; **h)** *O. chalybdis*; **i)** *O. major*; **j)** *O. greyi*; **k)** *O. parvacana*; **l)** *O. saxatilis*; **m)** *O. kelloggii*; **n)** *O. balteata*; **o)** *O. satanella.*

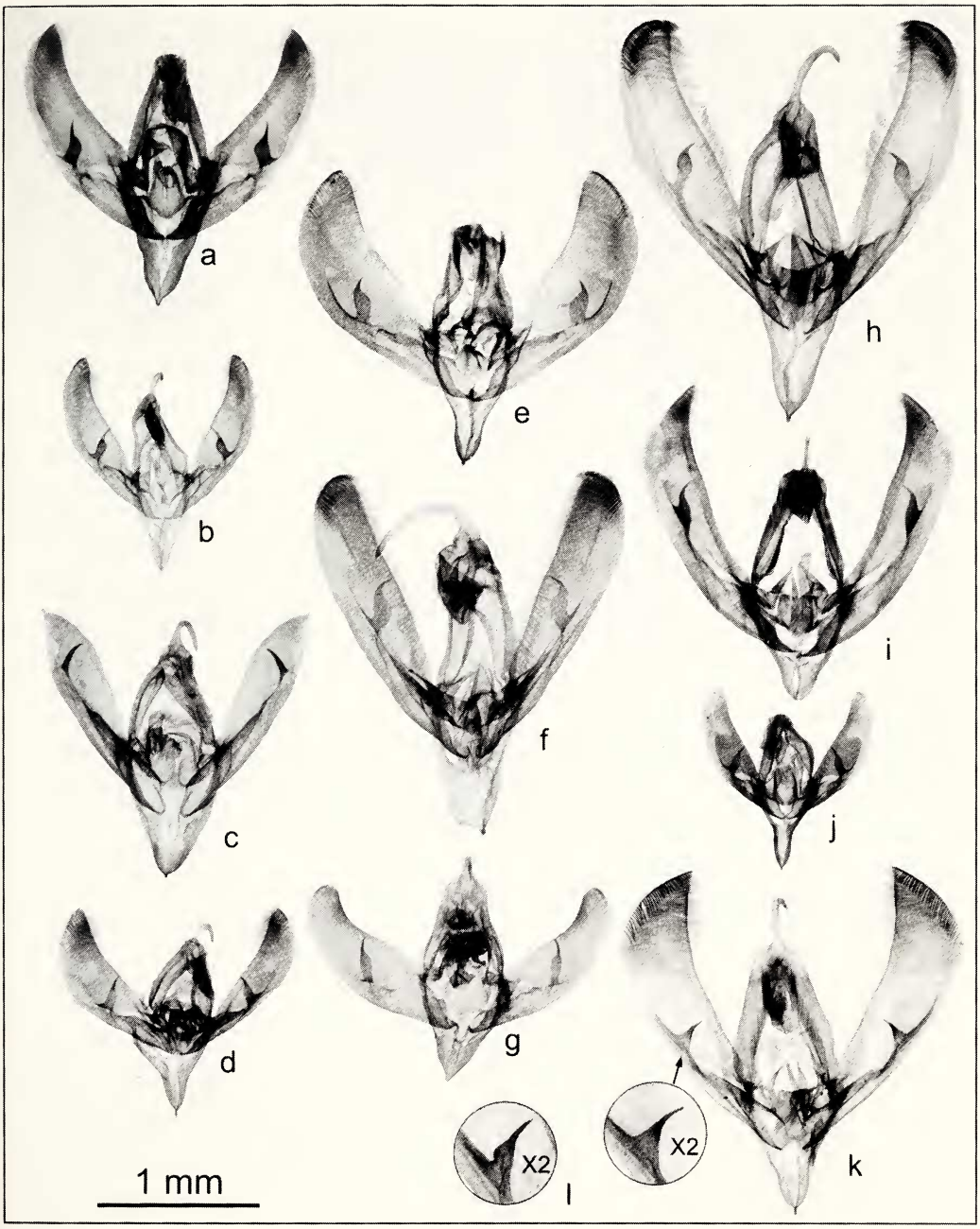

Figure 3. Genitalia of male *Oncocnemis* species with aedoeagae removed: **a)** *O. greyi*; **b)** *O. satanella*; **c)** *O. saxatilis*; **d)** *O. parvacana;* **e)** *O. coprocolor*; **f)** *O. major;* **g)** *O. tartarea*; **h)** *O. goedeni*; **i)** *O. extremis*; **j)** *O. mus*; **k)** *O. chalybdis*; **l)** clasper of *O. piffardi*.